

Platanthera pachycaulon (Orchidaceae): an addition to the orchid flora of Western Himalaya, India^a

Ishwari Datt Rai^{1,*}, Jeewan Singh Jalal², Gajendra Singh³ & Gopal Singh Rawat¹

Mots-clés/Keywords : new record/premier enregistrement, *Platanthera*, Uttarakhand, phytogeography/phytogéographie, taxonomy/taxinomie.

Abstract

Platanthera pachycaulon is reported for the first time from Western Himalaya. Its detailed description supplemented by a photograph, illustration and information about the habitat, as well as about the phenology and distribution of the species is provided. An artificial key to all taxa belonging to the genus *Platanthera* in western Himalaya is also provided.

Résumé

Platanthera pachycaulon (Orchidaceae) : addition à la flore d'orchidées de l'Himalaya occidental (Inde) – *Platanthera pachycaulon* est enregistré pour la première fois dans l'Himalaya occidental. Le présent article en propose une description détaillée, accompagnée de photographies, illustrations et informations sur l'habitat, la phénologie et la distribution géographique de l'espèce. Une clé artificielle d'identification de toutes les espèces de *Platanthera* de l'Himalaya occidental est également proposée.

Introduction

Platanthera L.C. Richard is an orchid genus comprising about 200 species (Mabberley, 2008; Ormerod, 2012) distributed throughout Europe, North

^a : manuscrit reçu le 18 août 2014, accepté le 4 septembre 2014

article mis en ligne sur www.richardiana.com le 05/09/2014– pp. 266-273 - © Tropicalia

ISSN 1626-3596 (imp.) - 2262-9017 (élect.)

Africa, North temperate Asia, the Malay Archipelago, New Guinea, Central and North America (Govaerts *et al.*, 2014). Misra (2007) listed 15 species from India of which 6 species are reported from Western Himalaya (Jalal, 2012). *Platanthera* is closely related to *Habenaria* and the two genera have been treated as congeneric by some authors (Pearce & Cribb, 2002). The genus can easily be differentiated from its allies by the absence of stigmatic processes and the absence of ovoid roots. During a botanical exploration to Uttarakhand Himalaya the first author came across some interesting populations of terrestrial orchid in three different localities (Fig. 1). Two populations were seen in Garhwal Himalaya viz., Tungnath and Mandani in Kedarnath Wildlife Sanctuary, in the Rudraprayag district. Another population was located in the eastern part of the Kumaun region in Khaliya at an elevation of 3,700 m in the Pithoragarh district. On critical observation and perusal of the relevant literature (Duthie, 1906; Deva & Naithani, 1986; Pangtey *et al.*, 1991; Jalal, 2005; Govaerts *et al.*, 2014) the specimens were identified as *Platanthera pachycaulon* (Hooker f.) Soó, a taxon hitherto unknown to be present in Western Himalaya.

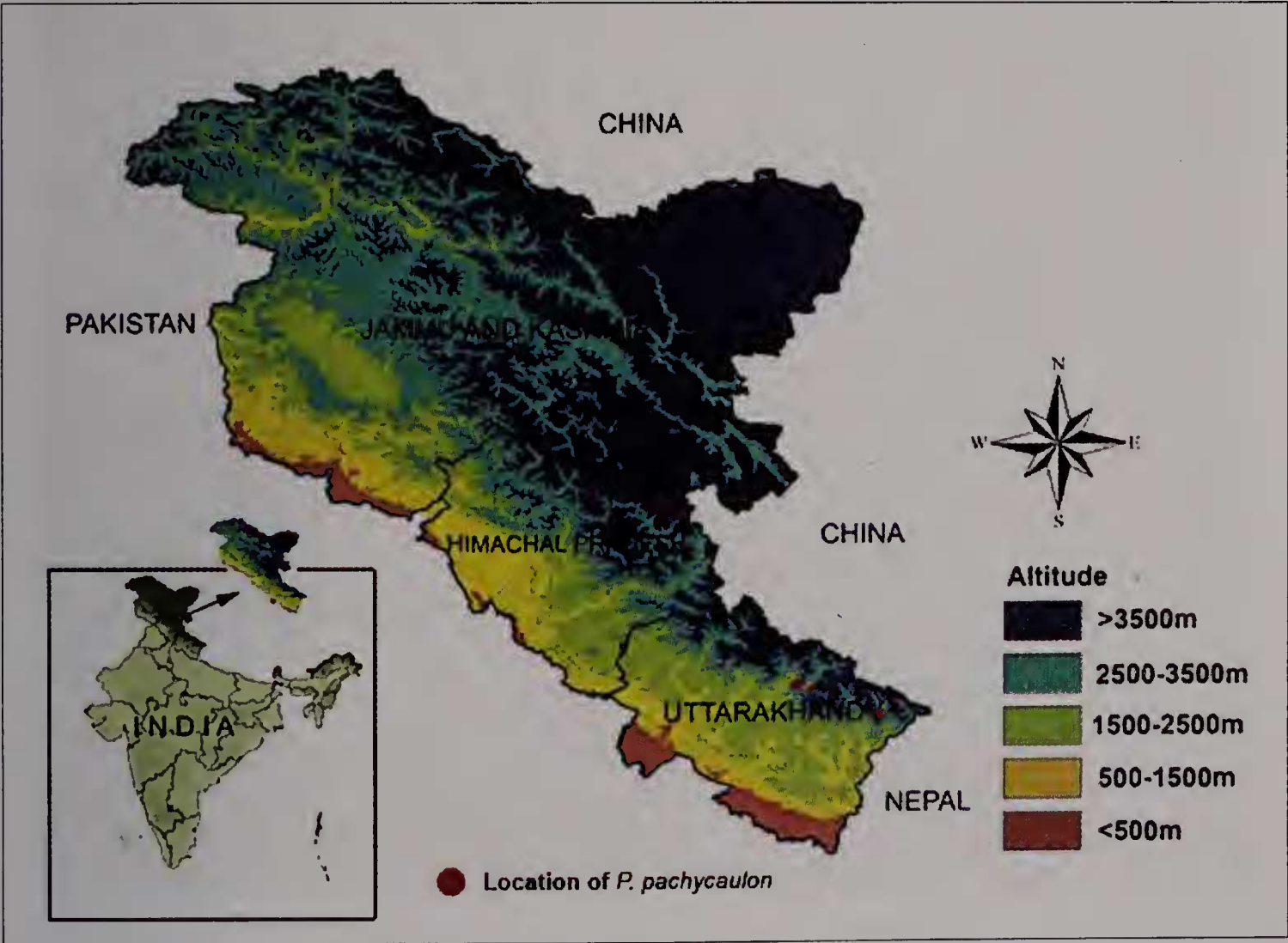


Fig. 1 : Location of *Platanthera pachycaulon* in western Himalaya

This communication deals with the systematic treatment of this taxon. Photographs, illustration, and information about the phenology, habitat and distribution of the species are provided for easy recognition of the species. Furthermore, we give an artificial key to all taxa occurring under the genus *Platanthera* in Western Himalaya.

Systematic treatment

Platanthera pachycaulon (Hooker f.) Soó, *Annales Historico-Naturales Musei Nationalis Hungarici* 26: 364 (1929); Pearce & Cribb, *Orchids of Bhutan*: 191 (2002); Lucksom, *Orchids of Sikkim North East Himalaya*: 143, t. 90 (2007).

Habenaria pachycaulon Hooker f., *Flora of British India* 6: 154 (1890).

Types: INDIA, Sikkim, Hooker f. s.n. (syntype K); Sikkim, Nattong, King's collector 4345 (syntype K).

Terrestrial herbs, 8-19 cm tall. Tubers fusiform, 3-6 cm long, smooth. Stem short, stout, with sheathing bracts above, 5-10 cm long; basal sheaths 2, overlapping, tubular, 1.5-2 cm long; stem bracts 2, leafy, lanceolate, acute, 4-4.5 × 0.8-0.9 cm. Leaf 1, oblong to oblong-elliptic, subacute to obtuse, sessile, sheathing below, 3-9.5 × 2-3.8 cm; sheath 2.5-3 cm long. Inflorescence subdensely many-flowered; rachis 3.5-4.5 cm long; floral bracts leaf like, large lanceolate, acute, 1-1.5 × 0.2-0.3 cm. Flowers *ca.* 8 mm across, green; pedicel and ovary glabrous, 6-8 mm long. Sepals sub-equal; dorsal sepal thick, linear oblong, subacute, margins minutely glandular ciliate, 1-veined, 3-4.5 × 1-2 mm; lateral sepals similar, spreading, 3.5-4 × 1.2-1.5 mm. Petals ovate oblong, fleshy, 3.5 × 1 mm. Lip simple, fleshy spurred, ovate lanceolate, subacute, 3-5 × 1-1.5 mm. Spur incurved, clavate, 4-5 mm long. Column stout, 0.3 mm tall; anther locules 1-1.5 mm; stigmatic processes short (Fig. 2 & 3).

Flowering: June-July.

Distribution in Western Himalaya: Rudraprayag district: Tungnath and Mandani (Dagla) inside Kedarnath Wildlife Sanctuary, Pithoragarh district: Khaliya top.

Global distribution: INDIA (Sikkim, Uttarakhand), BHUTAN.

Etymology: The species name has been derived from two Greek words, '*pachy*' meaning thick and '*caulon*' meaning stem.

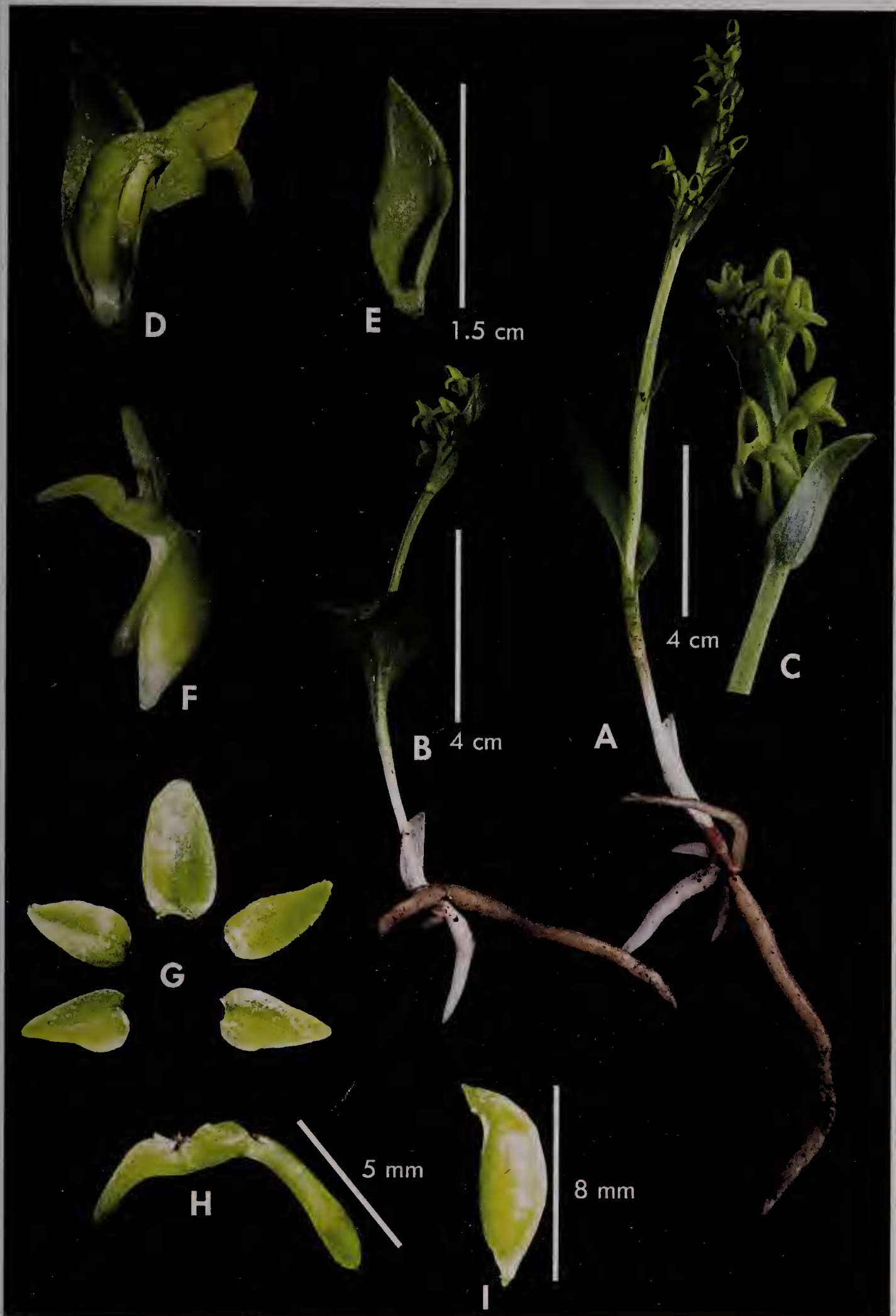


Fig. 2 : *Platanthera pachycaulon*

A & B. habit; C. inflorescence; D. flower; E. bract; F. lip, ovary & spur; G. sepals and petals; H. lip & spur; I. ovary. Photographs by Ishwari Datt Rai.

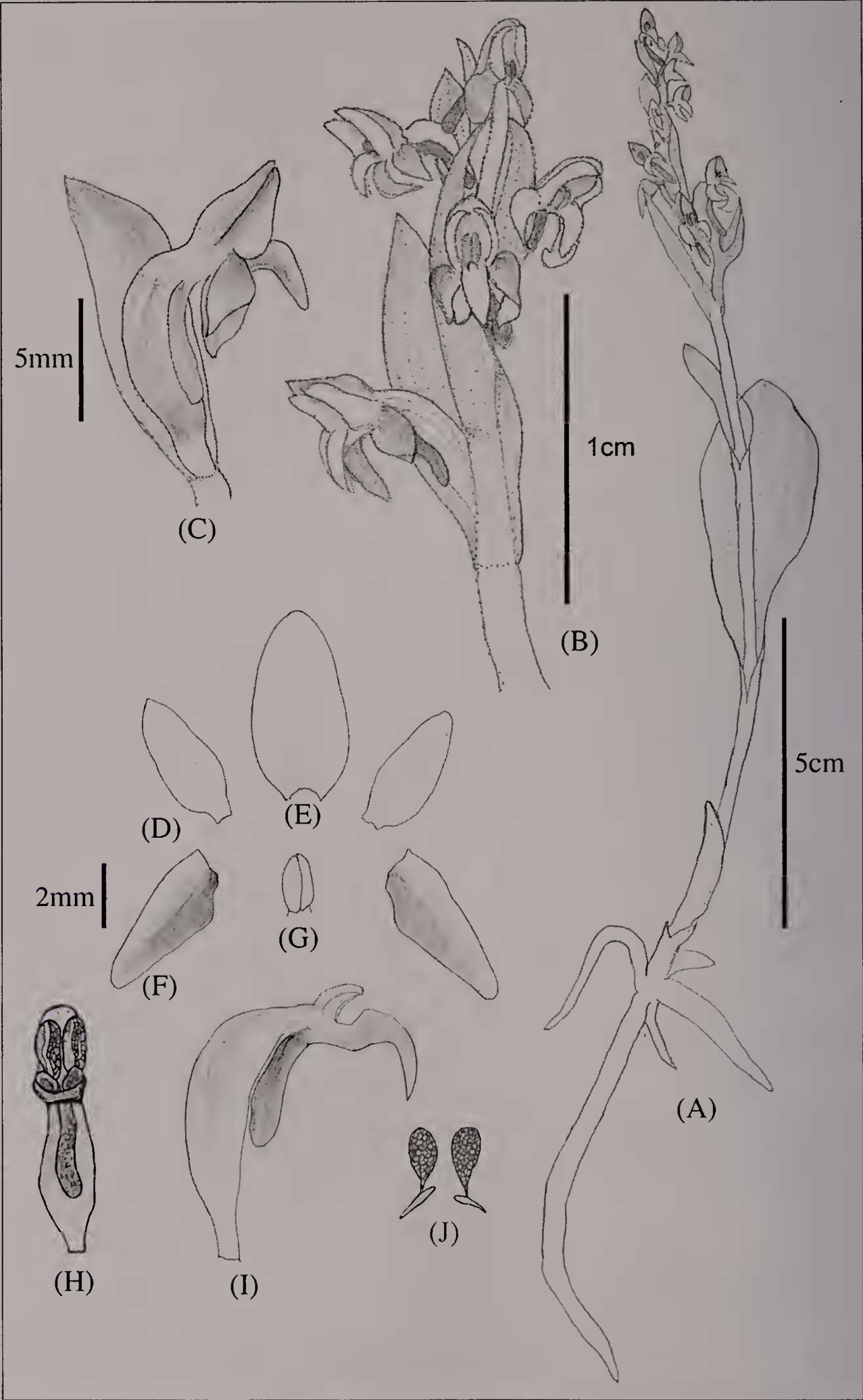


Fig. 3 : *Platanthera pachycaulon*

A. habit; B. inflorescence; C. flower; D. dorsal sepal; E. lateral sepal; F. petal; G. lip, ovary & spur; H. column; I. pollinarium. Drawing by Ishwari Datt Rai.

Taxonomic notes: Hooker f. (1890) wrote that the flowers of this species are purple. This was an error due to an incorrectly applied herbarium label which refers to a specimen (Hooker 277) of *Aorchis spathulata* (Pearce & Cribb, 2002). This species is often confused with *Platanthera leptocaulon* in the field. *Platanthera pachycaulon* can easily be identified by its dense inflorescence, its short spur, and its longer floral bracts.

Habitat & ecology: *Platanthera pachycaulon* occurs in Western Himalaya at elevations between 3,400 and 3,700 m. The species inhabits the moist slopes especially in the Northern aspects. It is found in association with *Geum elatum* N.Wallich ex G.Don, *Oxygraphis polypetala* (Rafinesque) Hooker f. & Thomson, *Trachydium roylei* Lindley, *Bistorta vivipara* (Linnaeus) Delarbre, *Aletris pauciflora* (Klotzsch) Handel-Mazzetti, *Salix lindleyana* N.Wallich ex Andersson, *Kobresia duthiei* C.B.Clark, *Anaphalis nubigena* A.P.de Candolle, *Bistorta amplexicaulis* (D.Don) Greene, *Primula denticulata* J.E.Smith, *Juncus concinnus* D.Don, *Ranunculus hirtellus* Royle, *Gentiana stipitata* Edgeworth, *Pedicularis pectinata* N.Wallich ex Benth, *Fragaria nubicola* Lindley ex Lacaita, and many orchids such as *Aorchis spathulata*, *Chusua pauciflora* (Lindley) P.F. Hunt, *Herminium josephii* Reichenbach f., *Platanthera leptocaulon* (Hooker f.) Soo.

Specimen examined. Uttarakhand, Rudraprayag district, Mandani (Dagla), 3,645 m. [30°40'25.94" N; 79° 8'23.28" E], I.D. Rai 11457, (08.08.2014); WII.

Threats: *Platanthera pachycaulon* is restricted to the alpine areas beyond 3,400 m elevation in the Himalayan range of India and Bhutan. In India it is so far reported from Sikkim and the present report from Uttarakhand state shows its extended distribution. A total of 42 mature plants were observed in the three localities of Uttarakhand during our study. All the localities are under immense pressure because of livestock grazing and anthropogenic disturbances that may eventually lead to the local elimination of the species. The species was also reported from Sikkim by Bose & Bhattacharjee (1980) and from the eastern Himalaya by Jain & Mehrotra (1984) who later in 1984 suggested that it has become extinct.

Key to *Platanthera* of Western Himalaya

- 1a. Leaf solitary-----2
- 1b. Leaves more than two-----3

- 2a. Spur longer than ovary, 7 mm long-----*P. leptocaulon*
 2b. Spur as long as the ovary, 5 mm long-----*P. pachycaulon*
 3a. Flowers white-----*P. arcuata*
 3b. Flowers pale-green-----4
 4a. Floral bracts shorter than ovary-----*P. stenantha*
 4b. Floral bracts longer than ovary-----5
 5a. Spur less than 6 mm long-----*P. clavigera*
 5b. Spur more than 10 mm long-----6
 6a. Spur curved and hooked upwards-----*P. edgeworthii*
 6b. Spur curved backwards-----*P. latilabris*

Acknowledgements

The authors are thankful to the Director and Dean, Wildlife Institute of India, for providing the necessary facilities and to Mr. Umed Singh Rana for his assistance during the field work. The first author is thankful to SERB-DST, Govt. of India for the financial support under Young Scientist scheme.

References

- Bose, T.K. & S.K.Bhattacharjee, 1980. *Orchids of India*. Naya Prokash, Calcutta. pp. 1-487.
- Deva, S. & H.B.Naithani, 1986. *The Orchid Flora of North-West Himalaya*. Print and Media Associates, New Delhi. pp. 1-459.
- Duthie, J.F., 1906. The Orchids of the North-Western Himalaya. *Annals of Royal Botanic Garden Calcutta* 9 : 81–211, tt. 94-151.
- Govaerts, R., M.A.Campacci, D.H.Baptista, P.J.Cribb, A.George, K.Kreuz & J.Wood, 2014. World Checklist of Orchidaceae. The Board of Trustees of the Royal Botanic Gardens, Kew. Published on the Internet; <http://www.kew.org/wcsp/monocots/> accessed 14 August 2014.
- Hooker, J.D., 1890. Orchidaceae. In *Flora of British India*. 6: 154. Reeve & Co., London.
- Jain, S.K. & A.Mehrotra, 1984. *A Preliminary Inventory of Orchidaceae in India*. Botanical Survey of India, Howrah. pp. 1-133.

- Jalal, J.S., 2005. *Systematics, phytogeography and habitat ecology of orchids in Uttarakhand*, Ph. D Thesis. Nainital, Kumaon University. pp. 1-210.
- Jalal, J.S., 2012. Status, threats and conservation strategies for orchids of western Himalayas, India. *Journal of Threatened Taxa* 4 : 3401-3409.
- Mabberley, D.J., 2008. *The Plant Book, a portable dictionary of the vascular plants*. p. 676. Cambridge University Press, Cambridge.
- Misra, S., 2007. *Orchids of India - A glimpse*. Bishen Singh Mahendra Pal Singh, Dehradun. pp 1-402.
- Ormerod, P., 2012. Orchidaceous Additions to the Floras of China and Myanmar. *Taiwania*, 57(2) : 117-126.
- Pangtey, Y.P.S., S.S.Samant & G.S.Rawat, 1991. *Orchids of Kumaun Himalaya*. Bishan Singh Mahendra Pal Singh, Dehradun. pp. 1-193.
- Pearce, N. & P.Cribb, 2002. The Orchids of Bhutan. In *Flora of Bhutan* Vol. 3, Part 3. Royal Botanic Garden Edinburgh and Royal Government of Bhutan.

¹ : Wildlife Institute of India, P.O. Box#18, Chandrabani, Dehradun, Uttarakhand, 248001, India

* : Corresponding author: ishwari.raai@gmail.com

² : Botanical Survey of India, Western Regional Centre, 7, Koregaon Road, Pune, Maharashtra, 411001, India

³ : G.B. Pant Institute of Himalayan Environment and Development, Kosi-Katarmal, Uttarakhand, 263643, India